

**VIBRATIONAL REDUCTION SYSTEM
FOR AUTOMOTIVE VEHICLES**

ABSTRACT

5 A vibration reduction and damping system for use in automotive closure panels, such as doors, lift gates, or other operable hatches comprising an intrusion device and an expandable material, such as a polymer-based foam, disposed along at least a surface of the intrusion device prior to final assembly of the vehicle by the vehicle manufacturer. The system is activated as the vehicle undergoes the final
10 vehicle assembly process, which activates and transforms the expandable material, preferably during an automobile paint operation, to expand, bond and fill the door assembly structure for vibrational damping and noise reduction.